

1.9. CLAIMS

I claim;

1. Apparatus for dialing an area code and phone number dial string when a calling party dials seven or less digits on a telephone network which requires the area code or the area code and additional digits to be dialed as a prefix to the digits dialed by the calling party for call completion, the apparatus remaining quiescent when a calling party dials less than or more than a predetermined number of digits, or any number of digits during the call after the calling party has connected to the called party, unless the calling party has interrupted the call progress to dial a second called party, the apparatus comprising:
 - A) A telephone line state detector having an input and an output, said line state detector input being connected to the telephone line of the calling party to detect the load impedance on the telephone line of the calling party and to provide an indicating signal of the line load impedance at said line state detector output.
 - B) A computer processor connected to said output of said line state detector.
 - C) A DTMF dialer having an input and an output, said DTMF dialer input being connected to said computer processor and said DTMF dialer output being connected to the telephone line of the calling party.
 - D) A DTMF receiver having an input and an output, said input of said DTMF receiver connected to the telephone line of the calling party, and said output of said DTMF receiver connected to said computer processor.
 - E) A line interruption circuit having a control input, a line input, and a line output, said control input of said line interruption circuit being connected to said computer processor through circuit isolation means and said line input of said line interruption circuit being connected to the tip and ring connection of the calling party's telephone, and said line output of said line interruption circuit being connected to the tip and ring connection of the telephone line of the calling party.

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- F) A non-volatile programmable memory circuit means connected to the computer processor for storing the telephone prefix and other user defined options.
 - G) A random access memory circuit, RAM, means connected to the computer processor for storing digit strings dialed by the calling party.
 - H) A user interface device means connected to said computer processor for prompting and acknowledging inputs of user options by the calling party to initialize the apparatus of claim 1.
 - I) Program instruction means residing in said computer processor or said non-volatile programmable memory circuit for detecting off-hook, on-hook, and hook flash line conditions in response to said indicating signal from said line state detector output.
 - J) Program instruction means residing in said computer processor or said non-volatile programmable memory circuit for controlling said line interruption circuit effecting a flash hook condition on the telephone line.
 - K) Program instruction means residing in said computer processor or said non-volatile programmable memory circuit for controlling and responding to said DTMF receiver causing digits dialed by the calling party to be recorded in said RAM connected to said computer processor.
 - L) Program instruction means residing in said computer processor or said non-volatile programmable memory circuit through flash hook means sub-claim J wherein one flash is effected of duration between 500 and 700 milliseconds for clearing the telephone line in preparation for dialing the prefix and telephone number specified by the calling party.
 - M) Program instruction means residing in said computer processor or said non-volatile programmable memory circuit for controlling said DTMF dialer, causing said DTMF dialer to dial the complete dial prefix and telephone number of the dial sequence initiated by the calling party.
 - N) Program instruction means residing in said computer processor or said non-volatile programmable memory circuit through flash hook means sub-claim J wherein in response to

flash hook detection means, sub-claim I, three successive flashes are effected, each of duration between 500 and 700 milliseconds, within 250 to 325 milliseconds of each other, for retaining line connection to first called party while dialing second called party through means sub-claim M.

- O) Program instruction means residing in said computer processor or said non-volatile programmable memory circuit for selectively inhibiting said DTMF dialer, permitting the calling party to successfully complete dial strings other than a specified number of digits directly to the Central Office without intervention by the apparatus of claim 1.
- P) Program instruction means residing in said computer processor or said non-volatile programmable memory circuit for selectively inhibiting said DTMF dialer, permitting the calling party to send dial strings of any length to the called party during a call to the called party without intervention by the apparatus of claim 1.
- Q) Program instruction means residing in said computer processor or said non-volatile programmable memory circuit for allowing the calling party to pre-store the dial prefix in said apparatus of claim 1.
- R) Program instruction means residing in said computer processor or said non-volatile programmable memory circuit for allowing the calling party to verify through user interface means sub-claim H, the dial prefix pre-stored in sub-claim Q.
- S) Program instruction means residing in said computer processor or said non-volatile programmable memory circuit for storing "1 +" dialing user option and "privacy" user option, (*67 or *82), as part of the dial prefix to be dialed through means sub-claim M.

I claim;

2. A Method for dialing an area code and phone number dial string when a calling party dials seven or less digits on a telephone network which requires the area code or the area code and additional digits to be dialed as a prefix to the digits dialed by the calling party for call completion, remaining quiescent when a calling party dials less than or more than a predetermined number of digits, or any number of digits during the call after the calling party has connected to the called party, unless the calling party has interrupted the call progress to dial a second called party, the method comprising:
 - a. Programmed instruction means for providing a user options interface allowing user to define a default dialing prefix.
 - b. Programmed instruction means for notifying user of the default dialing prefix, sub-claim a
 - c. Programmed instruction means for calculating a specified number of digits dialed by calling party required to activate the method of claim 2 according to the formula
(Specified number of digits = Total number of digits required to complete the call – Number of default dialing prefix digits entered by user, sub-claim a)
 - d. Programmed instruction means for retrieving the specified number of digits dialed by calling party required to activate the method of claim 2.
 - e. Programmed instruction means for detecting an off hook , flash hook, or on-hook condition.
 - f. Programmed instruction means for remaining quiescent until an off hook condition has been sensed.
 - g. Programmed instruction means for capturing , counting, and temporarily storing dtmf digits dialed by calling party.
 - h. Programmed instruction means for timing out the programmed instruction means, sub-claim g.

- i. Programmed instruction means for appending digits dialed by calling party to the pre-stored prefix digits and temporarily storing the resultant digit sequence if and only if the number of digits dialed by the calling party is equal to the specified number of digits, sub-claim c.
- j. Programmed instruction means for placing the resultant digit sequence, sub-claim i on to the Service Provider's network for call completion.
- k. Programmed instruction means for placing dtmf digits dialed by calling party, sub-claim g on to the Service Provider's network for call completion if and only if no resultant digit sequence, sub-claim i was stored.
- l. Programmed instruction means for remaining quiescent during call progress, sub-claim j, unless a flash hook, or other transition from off-hook, to on-hook, to off-hook, sub-claim e has been detected.
- m. Programmed instruction means for re-activating program instruction means sub-claims d through l upon detection of transition from on-hook to off-hook, sub-claim e.
- n. The programmed instruction means, sub-claims a through d wherein said programmed instruction means reside and function in the Service Provider's Advanced Intelligent Network Service Control Point, SCP, or other equivalent network element.
- o. The programmed instruction means, sub-claims e, f, and g, wherein said programmed instruction means reside and function in the Service Provider's Advanced Intelligent Network Call Control functional area of the Service Switching Point, SSP, or other equivalent network element.
- p. The programmed instruction means, sub-claims h and i wherein said programmed instruction means h resides and functions in the Service Provider's Advanced Intelligent Network Intelligent Peripheral, IP, and said programmed instruction means i resides and functions in the Service Provider's Advanced Intelligent Network Service Control Point, SCP.

- q. The programmed instruction means, sub-claim j wherein said programmed instruction means reside and function cooperatively between the Service Provider's Advanced Intelligent Network Service Control Point, SCP and said Service Provider's Service Switching Point, SSP, the SCP digitally transmitting said resultant digit sequence, sub-claim j to said SSP upon which said SSP completes the call.
- r. The programmed instruction means, sub-claim k wherein said programmed instruction means reside and function cooperatively between the Service Provider's Advanced Intelligent Network Service Control Point, SCP and said Service Provider's Service Switching Point, SSP, the SCP digitally transmitting a null resultant digit sequence, sub-claim k to said SSP upon which said SSP completes the call using only the dtmf digits dialed by the calling party.
- s. The programmed instruction means, sub-claims l and m, wherein said programmed instruction means reside and function in the Service Provider's Advanced Intelligent Network Call Control functional area of the Service Switching Point, SSP, or other equivalent network element.